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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,844	08/25/2003	Yi-Liang Lu	3079/186	1458

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EXAMINER	
SHERMAN, STEPHEN G	
ART UNIT	**PAPER NUMBER**
2629	

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,844	LU ET AL.	
	Examiner	Art Unit	
	Stephen G. Sherman	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-7 and 11-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6,7 and 11-13* is/are allowed.

6)☒ Claim(s) *1,4,5 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed the 2 May 2006. Claims 1, 4-7 and 11-14 are pending. Claims 2-3 and 8-10 are cancelled.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 4-5 and 14 have been considered but are moot in view of the new ground(s) of rejection.

3. Claim 5 is objected to because of the following informalities:

Claim 5 recites of the gray signal modulator as described in claim 3, however, claim 3 has been cancelled. The claim should be changed to be dependent from claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 4-5 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US 2003/0098839).

Regarding claim 1, Lee discloses a liquid crystal display (LCD) device (Figure 7), comprising: a gray signal modulator for receiving gray signals of the input image data, and for outputting modified gray signals by considering the current and the preceding field image data and by considering the character of input image data (Figure 7 shows gray signal modifier 400 receiving input Gn and producing output Gn'. Figure 8 shows the details of the gray signal modifier 400 wherein the data gray signal converter 440 compares the current Gm and previous Gm-1 signals. Figure 9 shows the details of data gray signal converter 440 wherein the modified signals Gm' are output based on current and previous frame data Gm and Gm-1 and the modification parameter input unit 444 as explained in paragraph [0129], where the modification parameter input unit 444 considers the character of input image data such as environment data, i.e. whether the LCD displays static graphics or moving graphics.); wherein the gray signal modulator comprises:

an input terminal for receiving the gray signals of input image data (Figure 8, the terminal of combiner 410 receives Gn.);

a frame memory for storing the preceding field image data of the input gray signals (Figure 8, frame memory 420);

a controller for controlling the frame memory and the reading and writing processes thereof (Figure 8, controller 430);

signal preprocessor for preprocessing the gray signal from the input terminal or detecting the character thereof (Figure 9 shows modification LUT 442 which preprocesses the gray signal before the calculator 443 generates the modified output.); the signal preprocessor considering the differences between the current and preceding field image data for reducing the noise induced from the input gray signals (Figure 9 shows that the modification LUT 442 considers the current image data Gm and previous image data Gm-1 for providing a compensation to account for the modification parameter input such as temperature or image quality as explained in paragraph [0130].), and having further function to cover compensation if the frame rated is varied (Paragraph [0125] explains that the combiner 410 and divider 450 shown in Figure 8 are provided to account for frequency difference, i.e. frame rate.);

a gray signal data converter for outputting the modified gray signals by considering the gray signals of the preceding field image data transmitted from the frame memory and the input (Figure 9 shows that calculator 443, which acts as a gray signal data converter as explained in paragraphs [0134]-[0135], the calculator 443 receiving current frame data Gm and previous frame data Gm-1 for converting the gray data and then outputting such), and

an output terminal for transmitting the modified gray signal to the data driver (Figure 7 shows that data gray signal modifier 400 outputs Gn' to the data driver 300.);

a data driver for converting the modified gray signals into the corresponding data voltages for driving the liquid crystal molecules in each to produce image signal (Figure 7, data driver 300 is explained in paragraph [0119].);

a gate driver for continuously supplying the scanning signals (Figure 7, gate driver 200 is explained in paragraph [0117].), and

a liquid crystal display panel (Figure 7 LCD panel 100.), comprising a plurality of gate lines for transmitting said scanning signals (Figure 7, S1-Sn), a plurality of data lines being insulated from and crossing the gate lines for transmitting image signals (Figure 7, D1-Dm), and an array of pixels forming by the areas surrounded by the said gate lines and said data lines (Figure 7 and paragraph [0116].).

Regarding claim 4, Lee discloses the gray signal modulator as described in claim 1.

Lee also discloses of the gray signal modulator wherein the signal preprocessor is specifically designed for detecting a certain character of input gray signal for providing the gray signal data converter to select a suitable converting scheme (Figure 9, modification parameter input unit 444 considers the character of input image data such as environment data, i.e. whether the LCD displays static graphics or moving graphics as explained in paragraph [0129] and then selects the suitable LUT table to be used in the conversion.).

Regarding claim 5, Lee discloses the signal preprocessor as described in claim 1.

Lee also disclose wherein the detection of said character of input gray signal data includes the detection of different video systems, different frame rates, different images with different signal-to-noise ratios, different interfaces or user dependent parameters (Paragraph [0129] explains that the character could be a user input received from a keyboard or a button.).

Regarding claim 14, Lee discloses the gray signal modulator as described in claim 1.

Lee also discloses wherein the signal preprocessor is specifically designed as a noise-reduction preprocessor for reducing the noise induced from the input gray signals (As explained in the rejection of claim 1, the modification LUT 442 preprocesses the signal based on the correction factor meaning that the preprocessor is specifically designed for that function, where the correction reduces noise.).

Allowable Subject Matter

6. Claims 6-7 and 11-13 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for allowance is the inclusion of the limitation of the gray signal modulator comprising a signal preprocessor in which the method for noise reduction satisfies a specific equation presented in the claim, which is not found singularly or in combination in the prior art.

The closest prior art references are Lee (US 2003/0098839) and Ham (US 2003/0095090) which each teach of comparing previous and current frames, however, neither teach or suggest of reducing noise using the specific formula presented in this application.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ham (US 2003/095090) discloses of a gray signal modulator which compares previous and current frames and can detect for variations in frequency.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS

19 May 2006

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600